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SITREP: The NPS Maritime Defense and Security Research Program Newsletter ; v. 50 (October 2010)

Naval Postgraduate School (U.S.). Maritime Defense and Security Research Program

"To dissuade and defeat threats as early and as far from U.S. borders as possible."

SITREP

THE NPS MARITIME DEFENSE AND SECURITY RESEARCH PROGRAM NEWSLETTER

http://www.nps.edu/research/mdsr/

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Dear Readers,

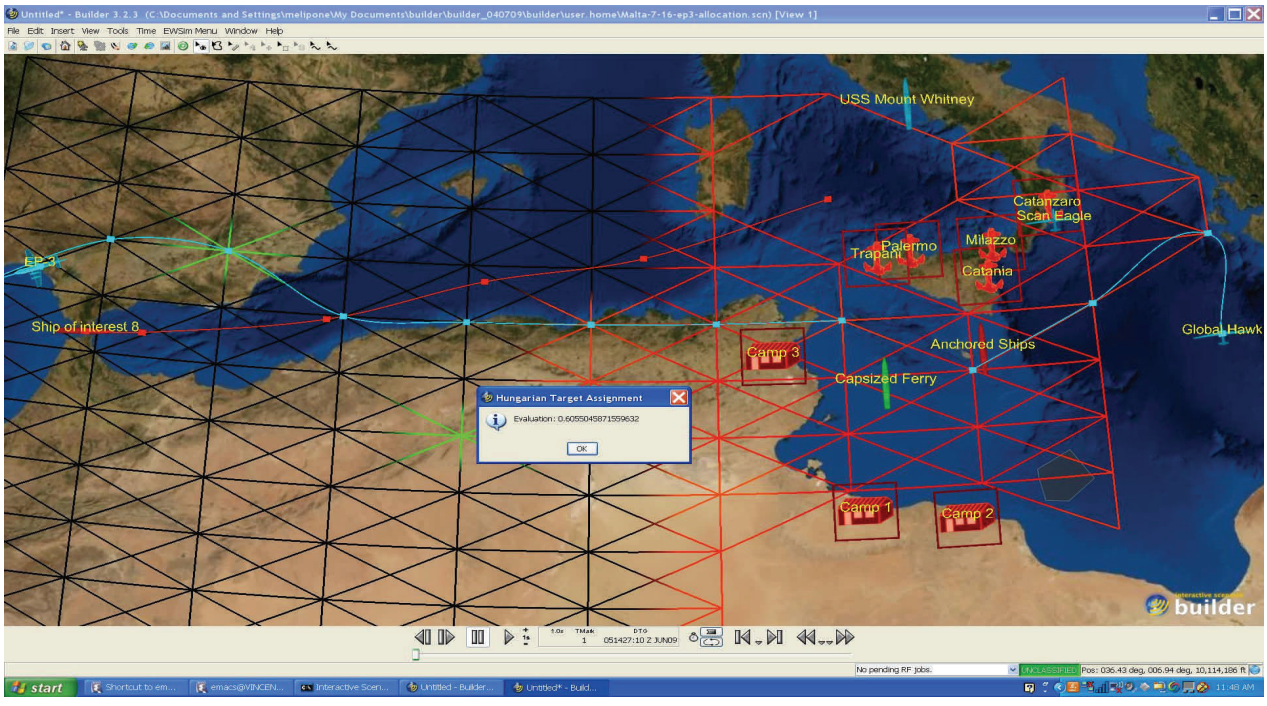
PLEASE submit a short 200-300-word article introducing your organization's Maritime Security and Defense-related mission and activities or add an event to our calendar.

Contact Ms. Rita Painter at rpainte@nps.edu.

HIGHLIGHTED RESEARCH

Optimization of ISR Platforms for Improved Collection in Maritime Environments

Maritime Domain Awareness (MDA) requires the ability to accurately identify, track, and understand the behavior of vessels, which can be facilitated through high quality track data obtained through Intelligence Surveillance and Reconnaissance (ISR) assets. The complexity and number of non-traditional missions will lead to heavy subscription of ISR assets in the future, which will require effective resourcing across the mission space to maximize collection and derive the best quality tracks for actionable tasking of limited resources.



The NRL Intelligent Decision Support Section at the US Naval Research Laboratory has developed a set of ISR optimization algorithms for the maritime domain, leveraging the Interactive Scenario Builder (ISB). The ISB is a 3D Radio Frequency tactical decision aid and mission planning system used in the Joint Information Operations Command and Navy Information Operations Centers. The optimization algorithms take into consideration "areas of interest" such as high interest vessel movements, shipping lanes, fishing areas, military exercises, ports of particular interest, area of high piracy, cargo, or past shipping incidents. These events help focus where specific ISR collection resources need to be positioned. A second event type includes "difficulty measures" such as signal limitations caused by Meteorology and Oceanography (METOC) conditions. Such affects may lead to a reduction in effective surveillance and tracking caused by spatial-temporal gaps in signal collection. The optimization algorithms simultaneously optimize over areas of interest, difficulty measures and ISR asset performance characteristics to improve signal collection efforts in the maritime domain.

The development and integration of the optimization algorithms within the ISB has been funded by the Tactical SIGINT Technologies Office, and is a collaborative research and development effort with the NRL Tactical Electronic Warfare Division.

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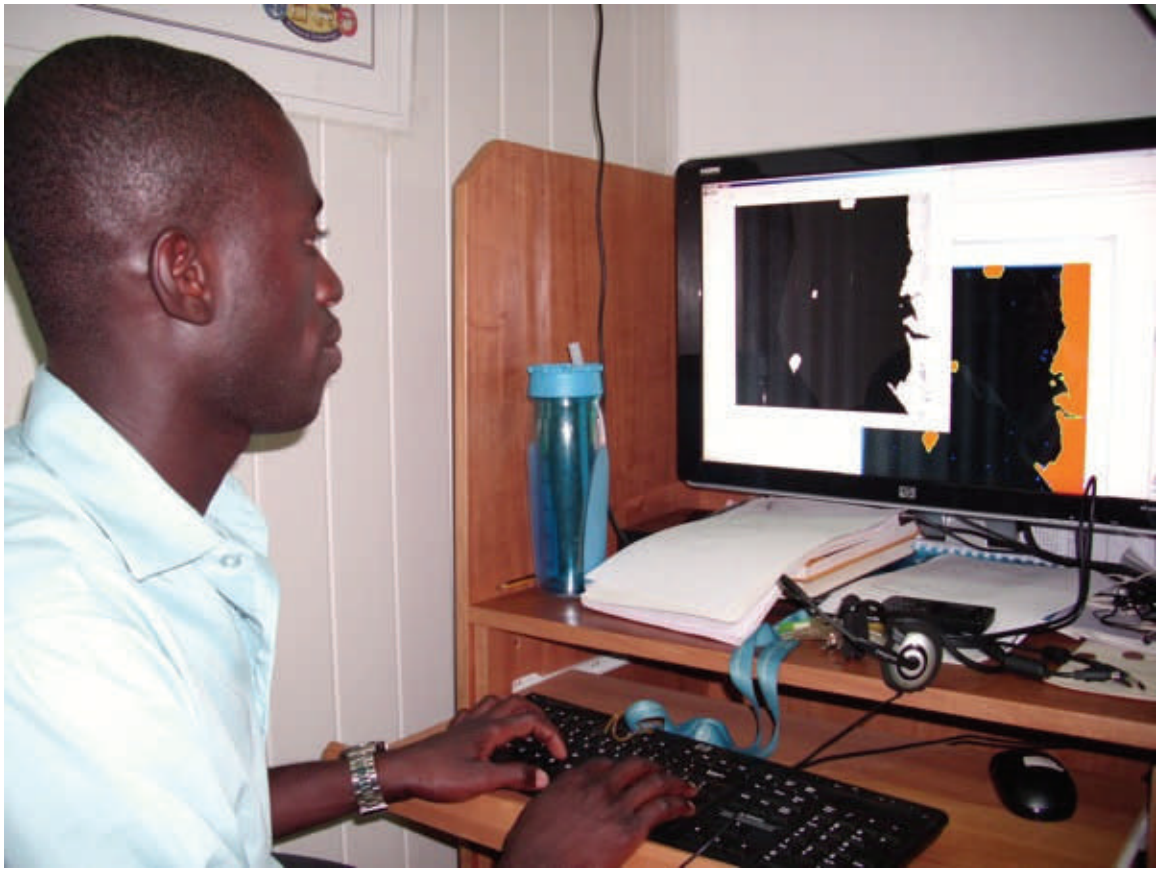
Collaboration to Engage in Satellite-based MDA

In 2008, Ghana, a coastal country on the Gulf of Guinea in West Africa, had a historic election. Ghana became one of the few "mature" democracies in Africa, supporting a second peaceful handover of power between opposing political parties. With a GDP growth between four and six percent over the last decade, the nation was finally beginning to fulfill the promise of the 1950's when it became the first nation in sub Saharan Africa to gain independence from the colonial powers.

Unfortunately though, Ghana still suffers many of the typical challenges of developing countries. Among them is an inability to comprehensively monitor and protect the maritime resources found in its Exclusive Economic Zone. Fishermen, foreign and local, routinely engage in illegal fishing, drug traffic rates are unknown but have likely increased, and oil development is proceeding rapidly despite questions about Ghana's frontier with the Ivory Coast and its ability to mitigate oil spills.

Into that dynamic of growth and challenges, The Space and Naval Warfare Systems Center, Pacific (SPAWAR - SSC PAC), US Naval Forces Africa 's Africa Partnership Station (APS), and the University of Ghana have initiated a collaboration to engage in satellite-based Maritime Domain Awareness. The University of Ghana, with a grant from the Office of Naval Research (ONR), had built a remote sensing lab and research team. With support from APS, SPAWAR is now collaborating with the Ghanaians to study African maritime traffic. They will develop tools for visualizing the type of traffic common to Africa, which is often small and/or wooden, and perform a survey of ship traffic in the region. These tools will also have application for studying oil spills, coastal erosion, and habitat degradation, thus setting up the University of Ghana to continue working with Ghana's maritime security forces to protect their national waters. Through this collaboration, Ghana will be able to better protect its national resources and continue its climb to becoming a beacon of peace and prosperity in Africa.



Kwame Agyekum, of the University of Ghana, trains on analyzing imagery in preparation for the collaborative program with SPAWAR and APS

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The LIBRARIAN'S CORNER— Greta Marlatt, gmarlatt@nps.edu

(CONTROL +click, to follow links)

RECENT NPS THESES

Arky, Aaron S. Trading Nets for Guns: The Impact of Illegal Fishing on Piracy in Somalia. Naval Postgraduate School, September 2010. http://edocs.nps.edu/npspubs/scholarly/theses/2010/Sep/10Sep_Arky.pdf

French, Daniel W. Analysis of Unmanned Undersea Vehicle (UUV) Architectures and an Assessment of UUV Integration into Undersea Applications. Naval Postgraduate School, September 2010. http://edocs.nps.edu/npspubs/scholarly/theses/2010/Sep/10Sep_French.pdf

REPORTS

Harris, S and D. Dunn. Security Modeling for Maritime Port Defense Resource Allocation. SRNL-STI-2010-00537, 2010 http://sti.srs.gov/fulltext/SRNL-STI-2010-00537.pdf

Maritime Freight Transportation, National Economic Recovery, and Global Sustainability: Coordinating a Strategic Plan http://onlinepubs.trb.org/onlinepubs/trnews/trnews269MarineFreightTrans.pdf

Maritime Security: Actions Needed to Assess and Update Plan and Enhance Collaboration among Partners Involved in Countering Piracy off the Horn of Africa. GAO-10-856, http://www.gao.gov/products/GAO-10-856

ADDITIONAL LINKS

http://www.nps.edu/library/

https://www.hsdl.org

http://gretaslinks.blogspot.com/

Future Events:

Jan 11-13 SOUTHCOM Maritime Asymmetric Threat Working Group (MATWG) at the Joint Interagency Task Force-South (JIATF-S) (Invitation Only)
Jan 17 MARLO conference, Dubai

Feb 9-10 Small Vessel Security Threat Conference to Address New DHS SVSS Implementation and Impact http://svstconference.com

Feb 22-24 AFCEA Homeland Security Conference- "Working Together Today for a More Secure Tomorrow" , Ronald Reagan International Trade Center Washington, D.C. http://www.afcea.org/events/homeland/11/home.asp

May 2-5 Maritime Security Conference, Kiel Germany http://www.cjoscoemaritimeconference.org

May 4-5 9th Maritime & Transportation Security Expo, Baltimore Convention Center, MD http://www.maritimesecurityexpo.com

Jun 20-23 79th MORS Symposium, Naval Postgraduate School http://www.mors.org